UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,112	02/26/2004	Ching-Wei Chang	J-SLA.1477	7586

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EXAMINER
WASHINGTON, JAMARES

ART UNIT	PAPER NUMBER
2625	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>18 July 2007</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1, 3, 4 and 6</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1, 3, 4 and 6</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application

6)☐ Other: _____ .

DETAILED ACTION

Response to Amendment

1.   Applicant's amendments and response received on July 18, 2007 have been entered.

Claims 1, 3, 4, and 6 are pending. Claims 2 and 5 have been canceled. Applicant's newly

amended claims and arguments are addressed hereinbelow.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3.   Claims 1, 3, and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by

Ravishankar Rao et al (US 5943477).

Regarding claims 1, 3, and 6 previous grounds of rejection are maintained and incorporated herein from previous office action mailed April 18, 2007. Amendments to the rejected claims will be addressed below.

Regarding claim 1, Rao discloses specific, halftone geometric dot patterns of plural pixels (Fig. 3, Numeral 37. Statistics of 3 by 3 matrices stored in the form of a lookup table), where those dot patterns include a predetermined geometric pixel arrangement ("...probabilistic description of the pixel coverage, depending on the surrounding pattern" at column 5 lines 31-32. Depending on the surrounding (geometric) pattern to a central pixel, proper ink coverage for that central pixel is determined) possessing (a) a central pixel (Fig. 2 pixel (i,j), which is the mentioned subject pixel ("For each pixel (i,j), we need to characterize the amount of ink to be printed at that pixel" at column 5 lines 4-5), and (b) the presence or absence of a defined collection and geometric distribution of immediately neighboring pixels (Fig. 1A and 1B), and further where those patterns collectively represent the halftone dot-pattern population characteristics of an expected halftoned color image which is to be output by the device ("The pixel coverage calibration method disclosed allows a simple direct computation of the statistics of the microscopic structure of the image to be printed (one just has to collect what is predicted for each pixel...)" at column 6 lines 1-4 and column 8 lines 46-49).

Regarding claim 3, Rao discloses the method of claim 1, wherein each pre-selected halftone dot pattern takes the form of a three-by-three matrix of pixels (Fig. 3 numeral 31. Choosing 0 for random number to create 3 by 3 matrix statistics in step 32).

Regarding claim 6, Rao discloses a method for minimizing color-image halftone dot-gain in the output of a multi-level halftone color-imaging output device comprising:

characterizing that device's halftone output (column 2 lines 29-34), on a per-color basis (column 8 lines 46-47), regarding geometric pixel-pattern-specific dot gain (Regarding 3 by 3 matrices as described in Fig. 3 numeral 31) of which can be related to device pixel-infeed intensity levels (Related to the amount of ink coverage as described throughout the reference), and

from that characterizing (Stored statistics in the form of LUTs Fig. 3 numeral 37), creating and then applying to throughput color-image files, on a pixel-by-pixel basis (column 5 lines 4-5), a pixel-to-device infeed intensity correction value based upon geometric pixel pattern considerations, thus to minimize device-output dot gain (Fig. 4 numerals 42-44. Determining ink density at the subject pixel's location).

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5.   Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Ravishankar Rao et

al (US 5943477).

Regarding claim 4 previous grounds of rejection are maintained and incorporated herein

from previous office action mailed April 18, 2007. Amendments to the rejected claim will be

addressed below

Regarding claim 4, Rao discloses the method of claim 1, wherein the selected output

device is a printer (column 1 lines 6-7), and said creating is based upon densitometer inspections

of such different pre-selected halftone dot patterns which have been printed by the printer as a

group of plural, same patterns (column 7 lines 16-26), and wherein further, with respect to each

such densitometer-inspected pattern, data points used to create the mentioned curve are

determined (column 7 lines 36-42) by comparing (a) densitometer-perceived percentage-of-

coverage readings that are taken of the printed output pattern (column 7 lines 16-20) with (b) the

idealized geometrical-percentage-of-coverage of non-white pixels in the pattern ("...statistics for

the ink density as a function of the composite configuration are generated..." at column 7 lines

40-41).

Rao does not specifically disclose "next adjacent" patterns.

However, Rao suggests the pluralities of patterns are "next adjacent" patterns by the use

of "registration marks" to "align the print and determine the location of the center pixel of each

configuration" (at column 7 lines 21-22).

It would have been obvious to one of ordinary skill in the art at the time the invention

was made for the method of dot gain reduction as disclosed by Rao to use next adjacent patterns

(configurations) when measuring the densities of the patch patterns to alleviate the need for

multiple test prints.

Response to Arguments

4.   Applicant's arguments filed July 18, 2007 have been fully considered but they are not

persuasive.

Remark: Regarding the argument that Rao's method of calibration does not depend upon

geometric considerations, in no way deals with any preselected group of geometric patterns of

pixels, and features instead, as its expressly stated central contribution to the art, the practice of

examining printed calibration material by looking specifically to determine the amount of ink

that is deposited at a particular central location in a grouping of pixels. Nothing specifically

proposed by the reference has anything to do consciously with addressing optical dot gain.

Examiner's response: Rao, as shown in the rejection of claim 1, discloses the calibration

method being dependent on "geometric considerations" as show in figure 1A where the central

dot ink density is dependent on the surrounding "pattern" of ink coverage. As described in

column 8 lines 31-41 where the "neighborhoods" are mapped into an index and the lookup table

entry at this index (or pattern of geometric dots) specifies the density of ink that the paper will

contain at that central pixel. Shown also in Fig. 3, the statistics generated for the density of the central pixel according to the 3 by 3 matrix (or "as a function of the composite configuration") is stored in the form of a lookup table. This means the ink density of a central dot is stored according to the pattern of dots surrounding the central dot, which suggests groups of preselected "geometric patterns" are stored in the form of a lookup table to compare against the inputted pixel patterns shown in Fig. 4 numeral 42.

As for the argument that "nothing specifically proposed by the reference has anything to do consciously with addressing optical dot gain", the mere fact that this is simply stated in the specification but not claimed in technical form renders this argument moot. Rao discloses that optical dot gain is compensated for by "measuring" for this type of dot gain and not simply inherent to a method of calibration with reference to Henry Kang "Color Technology for Electronic Imaging Devices" SPIE Optical Engineering Press 1997 (at column 1 lines 57-67 and column 2 lines 1-5). As stated ("If the measurement tools which are used to implement the present invention measure the coverage of the ink on paper, these previous theories can be used to obtain the corresponding human visual response" at column 1 line 67 through column 2 lines 1-3), it would be well known in the art to measure and thus calibrate the printer for optical dot gain by employing these well known techniques mentioned.

Remark: As for the argument that "geometric pattern thinking... is foreign to the practice described by the cited and applied prior art reference and is studiously avoided and ignored: The present invention...relates to the calibration of digital printers...[with a method and apparatus which]...do not depend on geometric assumptions on (sic)...[regarding]...the printed dots."

Examiner's response: Geometric patterns stored in the form of lookup tables as previously explained is clearly not ignored and is an intricate part of Rao's method in calibration and determining the density of the printed dots according to its periphery. The geometric assumptions referenced by applicant pertain to the actual printed central dot shape (round or square) and not the "pattern of geometric dots surrounding the central dot" in which the reference clearly reads upon as explained in the above argument.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jamares Washington whose telephone number is (571) 270-1585. The examiner can normally be reached on Monday thru Friday: 7:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, King Poon can be reached on (571) 272-7440. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jamares Washington
Junior Examiner
Art Unit 2625

JW

October 1, 2007

KING Y. POON
SUPERVISORY PATENT EXAMINER